Diffusion osmosis lab report assignment

Since osmosis and diffusion are both part of passive transport, this means that they do not require energy or pumps. There are different environments created due to diffusion. There are hypotonic, hypersonic, and isotonic environments. Hypotonic is when the solution has a lower solute concentration compared to the water potential. The hypersonic solution has a higher solute concentration and lower water potential. In an isotonic solution, there is no net movement and there is an equal concentration of solutes and water. In our lab, we modeled diffusion and osmosis with a hospital scenario.

It is important for an IV solution to have salts in it so the water and solute can be equal to create an isotonic environment. If there wasn’t, there would either be a hypotonic causing the cell to burst, or there would be hypersonic causing the cell to shrink. We created models of living cells by using dialysis tubing. The dialysis tube represented the cell membrane to act as selectively permeable to water and some solutes. We observed different solutes (NCAA, Evaluation, Glucose, Sucrose, and Water) in the dialysis tubing. The problem was what environment the solutes would create and whether eater would diffuse in or out of the cell.

I predicted that all of the tubes will be in a hypotonic environment after the 30 minutes because there is a higher concentration of water outside the cell. The water will diffuse inside the cell, therefore the cell will gain weight. We took the initial weight of each tube with the solute inside, the final weight, and then after took the percent change in weight. The control of the experiment was the model cell where there was water inside and outside the cell. My data proved my hypothesis and led me to conclude that all of the

solutions were in a hypotonic environment. For the second part of the experiment we were to think of an inquiry.

The purpose was to identify concentrations of sucrose solutions that we were given. We were to find what solution was closest to being isotonic in order to identify which of them was water. There were 6 different solutions that we observed. There were red, orange, yellow, green, blue, and purple solutions. For my individual inquiry, I used a potato to be placed in the solutions. I found that the potato does not shrink because it has a cell wall which supports and maintains a plant cells structure. I predicted that the potato would remain the same size in he blue solution because it would have an isotonic environment.

I thought that if the potato was placed in a hypotonic environment, then the percent change in mass would be greater than if placed in a hypersonic environment. Section II: Materials and Methods My tested hypothesis was that all of the dialysis tubes (cells) would have a hypotonic environment. If the dialysis tubes were placed in the beaker for 30 minutes, then after the 30 minutes, the water would diffuse in the cell, causing it to gain weight. For the first procedure, I created model cells with different solutions to determine the rate of diffusion.

The weights with the filled cell models can determine rate and direction of diffusion by measuring the percent change of mass and determining the environment after the experiment. A solid control for the procedure is to use water because that is in an isotonic environment, meaning that both concentrations are equal. There were four solutions that were used in the

experiment: sucrose, NCAA, glucose, and evaluation and the control: water. I took the five dialysis tubing which were acting as cells and filled them with 10 ml of each solution. We knotted each end but made sure to leave enough space at the top for water to diffuse in the cell.

The initial weight was taken and recorded in a data table. The five cells were placed in a beaker filled with water for 30 minutes. After the 30 minutes, the cells were weighed, and the final weight was recorded in the data table, and then the percent change was calculated. The materials used in this procedure were beakers, water, sucrose, glucose, Niacin, evaluation, 20 CM-long dialysis tubing and balances. In the inquiry, predicted that the blue solution was water and that it would have n isotonic environment, meaning there would be no percent change. First cut the potatoes into 6 cylinders of the same size by using a cork. I got six beakers and filled each with 20 ml of the different color-coated solutions with different concentrations (orange, red, yellow, green, blue purple). The initial mass of each potato cylinder was taken before placing in the solution. I placed the potatoes in the appropriate labeled beaker (1-6) of each solution and let them sit there for 30 minutes. After the 30 minutes, I took the final mass of each cylinder and lactated the percent change in mass.